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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/769,211	01/24/2001	Brandon W. Chung	IL-10678	4866

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EXAMINER

MERCADO, JULIAN A

ART UNIT

PAPER NUMBER

1745

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. .	Applicant(s) <i>QF</i>
	09/769,211	CHUNG ET AL.
	Examiner	Art Unit
	Julian A. Mercado	1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-19 is/are rejected.
- 7) Claim(s) 15 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

***Claim Objections***

Claim 15 is objected to because of the following informalities:

a. In claim 15 at line 11, it is suggested to change "when" after "wherein" to --a--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "improved durability" in claim 1 at line 4 is a relative term which renders the claim indefinite. The term "improved" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon a rejected base claim.

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim limitation "any shapes" in line 2. This claim is an omnibus type claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-13, 15 and 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Faita et al. (U.S. Pat. 5,482,792).

Faita teaches a first and second interconnect plate, i.e. bipolar plate [1] (shown in duplicate), a cell casing/holder plate [8] having an aperture, a fuel cell comprising electrodes [7] and membrane [6], the interconnect plates having holes [2], i.e. means for providing co-flow of fuel and oxidant gases for flow of fuel and oxidant gases therethrough. (Figure 2, col. 5 line 53-60) The membranes are specifically disclosed as solid electrolytes. (col. 1 line 34-36) The holes or openings include a plurality of radially extending slots [3].

With reference to FIG. 2, the bipolar plate (1) is made of a metal plate which may have a flat surface in the area of contact with the collector (14). The peripheral frame area of 55 the bipolar plate (1) is provided with holes (2) and optionally with distribution channels (3) for the inlet and outlet of the gases, holes (4) for the passage of the tie-rods (not shown in the figure) and optionally internal ducts (5) for the passage of a suitable cooling means. The dimensions of the bipolar 60

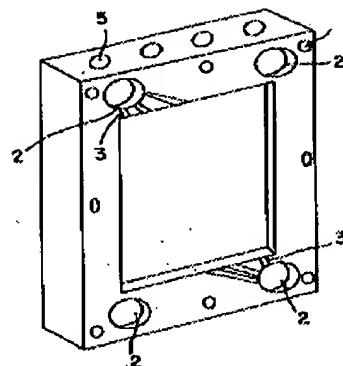


FIG. 2

The fuel cell is mounted in the cell casing/holder plate on a surface of a rim section [13], i.e. means for surface sealing a cell located adjacent a central aperture. (Figure 3, col. 6 line 48-56)

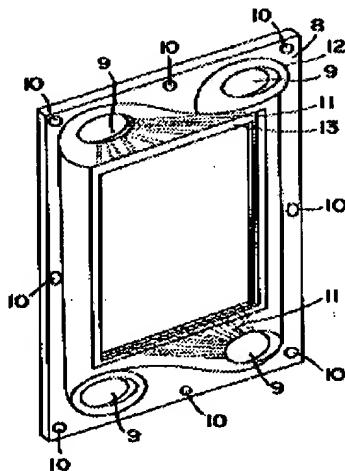


FIG. 3

internal space available for the passage of gas. The gasket-frame of FIGS. 3 and 4 is further provided with a step (13) along the inside border to permit a ready housing of the electrode (7) and at the same time ensure a good protection of the membranes (6) from possible irregularities along the periphery of the collectors (14), such as residual peaks or burrs from the cutting of the pieces having the desired dimensions from commercial sheets.

The cell casing/holder itself includes a pair of openings [9] having a cut-away section [11]. (col. 6 line 24-28)

23 corners are rounded off. The holes (9) are connected to suitable channels (11) cut out in the thickness of the gasket-frame and directed, coupled with channels (3), to uniformly distribute and collect the reactants and the products inside the cell. Although not compulsory, preferably the products

As to a stack of fuel cells, Faita specifically teaches a "multiplicity" arrangement. (col. 11 line 65 et seq.)

FIG. 6 describes the assembly made of a multiplicity of 25 cell elements of FIG. 1 to form the cell of the invention, comprising the bipolar plates (1), collectors (14), electrodes

(7), gasket-frames (8), ion exchange membranes (6), end-plates (18), pressure plates (17). The bipolar plates (1) are provided with external connections (16) which, once connected, short-circuits two or more bipolar plates of the cell 3 elements in the case of malfunctioning. The same result

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faita et al. as applied to claims 1-13, 15 and 17-19 above, in view of Akiyama et al. (U.S. Pat. 4,997,726).

The teachings of Faita are discussed above.

Faita does not explicitly teach the interconnect plates to have flow channels therebetween. However, Akiyama teaches flow channels [7, 17] for allowing oxidant and fuel gases to pass therethrough, respectively. See col. 4 line 49-55,

The gas separators (5, 15) are generally made of a  
50 heat resisting alloy, for example, a Ni-Cr alloy. As best  
shown in FIG. 3, the lower gas separator (5) is provided  
in its upper surface with a cathode gas supply chamber  
(6) including a plurality of cathode gas passages (7)  
separated by ribs (8) extending in parallel in the direc-  
55 tion of the flow of the cathode gas. In accordance with

and col. 5 line 4-9.

lar to that of the cathode gas. The chamber includes a  
plurality of passages (17) separated by ribs (18) extend-  
ing in parallel in the direction of the flow of the anode  
gas. The upper gas separator is small in size as com-  
pared with the upper surface of the lower gas separator  
(5) to form the space (10).

Thus, the skilled artisan would have found obvious to modify Faita's invention by employing flow channels within the interconnect plates. The motivation for such a modification would be to improve gas sealing within the internally manifolded gas distribution assembly.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. 6,180,274 B1 to Yoshimoto et al. is cited of cumulative interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian A. Mercado whose telephone number is (703) 305-0511. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3599 for regular communications and (703) 305-3599 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



September 29, 2002

  
Patrick Ryan  
Supervisory Patent Examiner  
Technology Center 1700